This month's Tech Tips are sponsored by: NAPA

Engine Oil Leak at Rear Main Oil Seal

Affected models: 1986-2008 GM passenger cars and light-duty trucks with 2.8L, 3.1L, 3.4L, 3.5L, 3.9L 60° V6 engine.

Important: This bulletin only applies to 60° V6 engines. Some of the discontinued 60° V6 engine VINs and RPOs may have carried over to other new model year engines and may no longer be a 60° V6 engine. So this bulletin may not apply. It is very important to verify that the following information is correct before using this bulletin:

- Year of vehicle
- V6 engine liter size
- VIN code
- RPO

If all the information from the vehicle you're working on can be found under the models listed above, then this bulletin applies to that engine. If one of more of the vehicle's information cannot be found under the models listed above, then this bulletin does not apply.

Important: This bulletin does not apply to 2004-'07 Saturn VUE models with 3.5L DOHC V6 engine (VIN 4 – RPO L66) or 2005-'08 Cadillac CTS with 2.8L HFV6 engine (VIN T – RPO LP1).

If a customer comments on external oil leakage, a new design crankshaft main oil seal has been released, which incorporates features that improve high mileage durability. Replace the crankshaft rear main oil seal with the new design (P/N 12592195) using the new installation tool (EN-48108) and the following service procedures.

Important: Before you replace the new design crankshaft rear main oil seal, be sure the PCV system is operating correctly.

Note: The new seal described below comes with a protective nylon sleeve already installed in the seal. This sleeve assures that the seal is installed in the correct direction and also protects the seal from getting damaged during installation. Do not remove the protective sleeve from the seal; if removed, the installation tool (EN-48108) will not work.

The new tool has a unique design to allow the technician to easily remove the rear main seal without nicking the crankshaft sealing surface and to easily install the rear main seal squarely to the correct depth and direction.

Removal Procedure

1. Remove the transmission.
2. Remove the engine flywheel.
3. Install the removal plate (see 2, in **Figure 1**) and both threaded adjustment pins and jam nuts (1) into the back of the crankshaft flange and secure the plate with adjustment pins and jam nuts.
4. Install #2 self drill screws 38 mm (1.5") long, eight needed, and tighten down flush to the plate.
5. Install the force screw and back off both jam nuts and continue to turn the force screw into the removal plate to remove the seal from the crankshaft.
6. Once the seal is removed from the crankshaft (see **Figure 2** on page 62), remove and save all eight screws and discard the old seal.

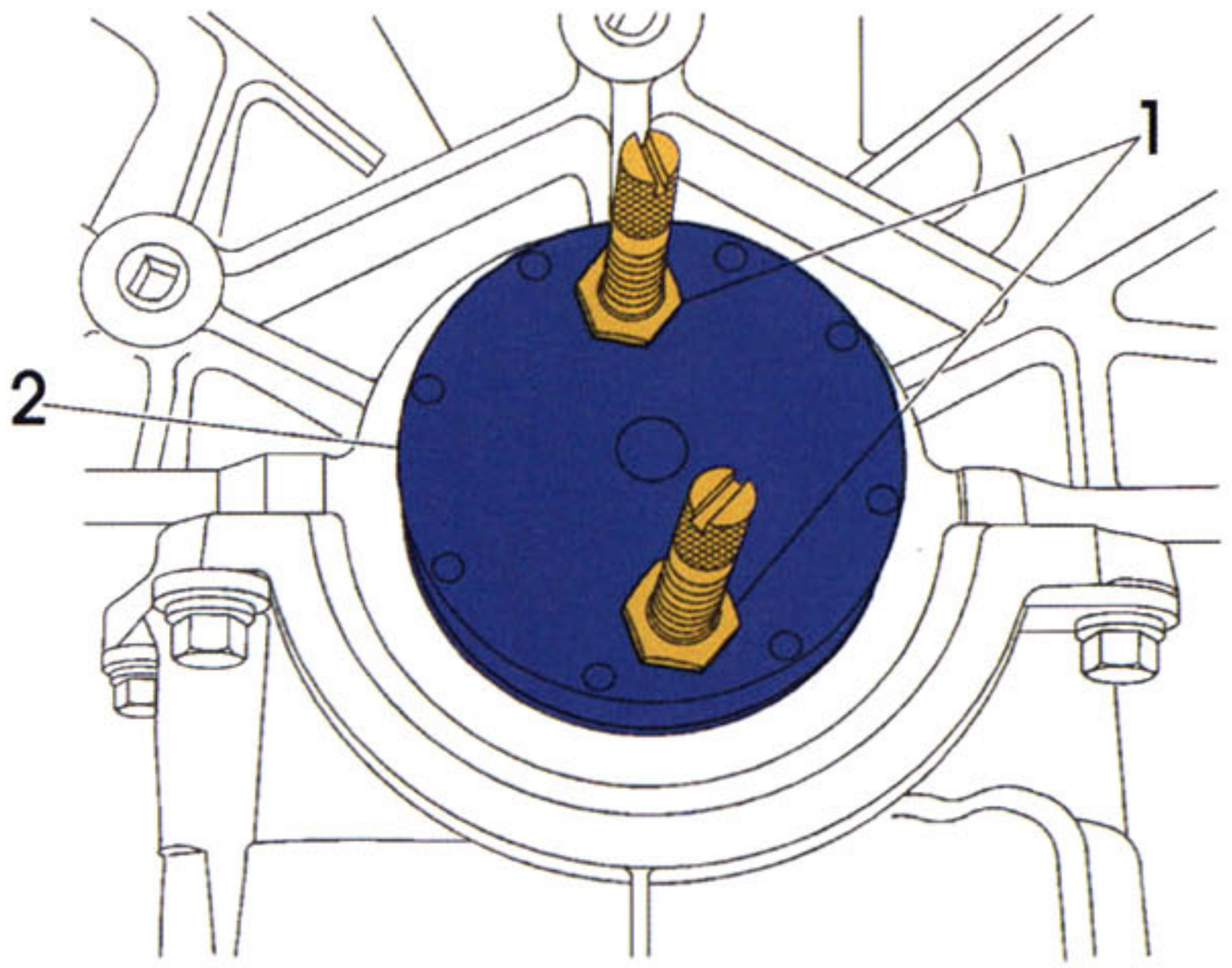


Figure 1

Note: Clean the crankshaft sealing surface with a clean, lint-free towel. Inspect the lead-in edge of the crankshaft for burrs or sharp edges that could damage the rear main oil seal. Remove any burrs or sharp edges with crocus cloth or equivalent before proceeding.

Installation Procedure

Note: Never apply or use any oil, lubricants or sealing compounds on the crankshaft rear main oil seal.

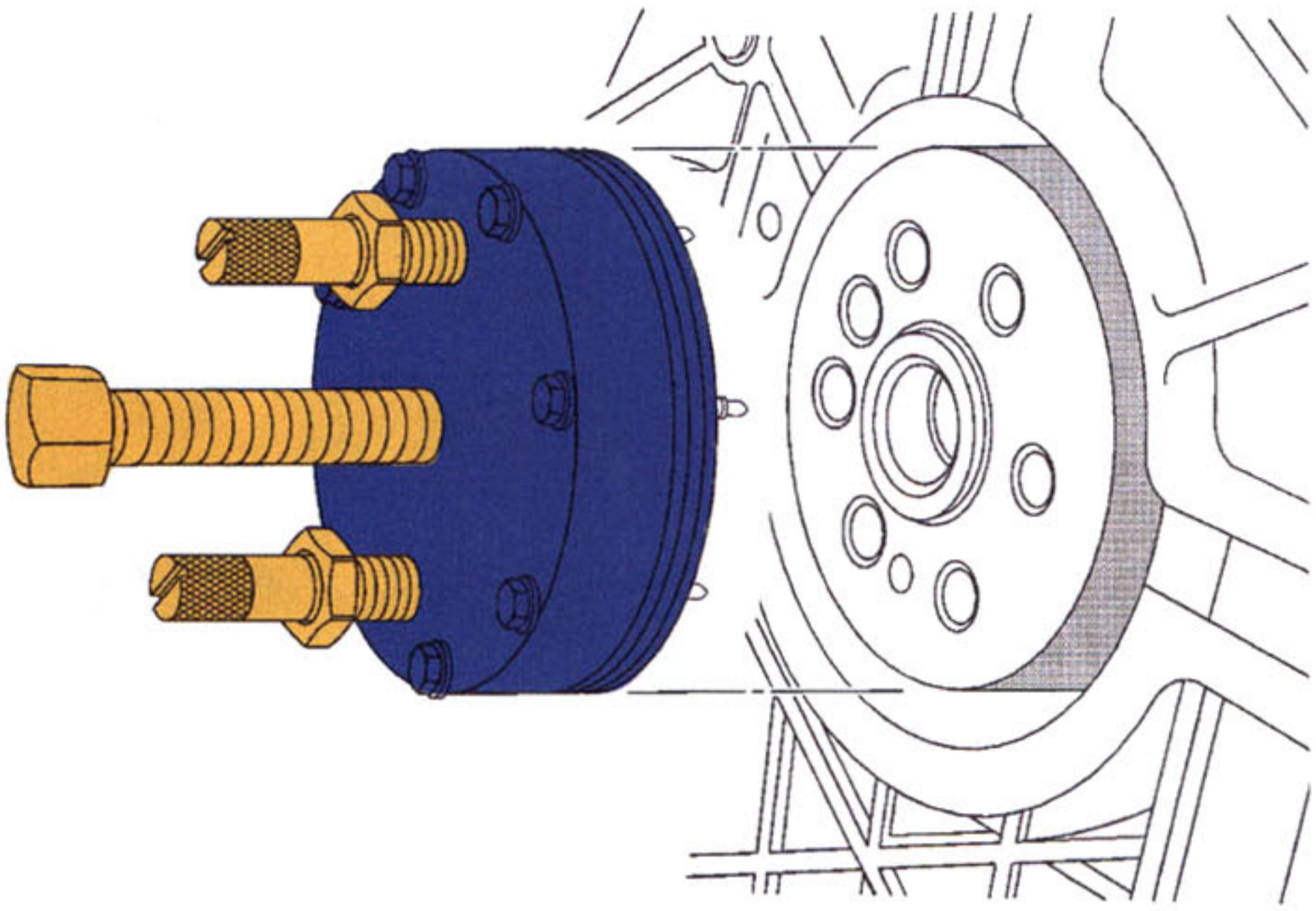


Figure 2

1. Align the mandrel dowel pin to the dowel pin hole in the crankshaft.
2. Using a large flat-bladed screwdriver, tighten the two mandrel screws to the crankshaft. Ensure that the mandrel is snug to the crankshaft hub.
3. Install the rear main seal (see 1, **Figure 3** on page 64), with the protective nylon sleeve attached (2), onto the mandrel. The seal, if properly installed, will center on a step that protrudes from the center of the mandrel. To protect from errors, the seal will only fit one way onto the mandrel.
4. Install the outer drive drum onto the mandrel. Install the bearing, washer and the drive nut onto the threaded shaft.
5. Using a wrench, turn the

TechTips: Brought to you by Delphi

Compressor Tech Tip

Manufacturer: Cadillac
Affected Models: All
Year: 1985 – 2001
Concern: A/C compressor inoperative

Procedure: On all Cadillac vehicles with body computers 1985 and up, the A/C compressor could be inoperative because the body computer is storing certain codes.

The codes will have to be cleared before the compressor will turn on. On some models, disconnecting the battery will work; on other models you will need to tap the on-board diagnostics (OBD). On-board diagnostics is entered by holding the OFF and WARM buttons together until the segment check light goes on the Electronic Climate Control (ECC) panel. Then let the buttons go.

The codes will be displayed on the Fuel Data Center (FDC), or on some models it will be displayed on the Climate Control Driver Information Center (CCDIC).

On Deville models up to 1993, after the codes are displayed, "70" will appear. After the "70" is displayed, you can select other features of on-board diagnostics.

To clear fault codes:

1. With "70" displayed, press and hold OFF and LOW together until "F00" appears
2. Release the buttons and allow the "70" to return
3. Turn the key to the OFF position for 10 seconds

On Eldorado, Seville and later DeVille models, after the codes are displayed an "ECM?" or "PCM?" will be displayed. Whenever there is a "?" you have to respond "yes" or "no." To answer "yes," press the FAN HIGH or UP button. To answer "no," press the FAN LOW or DOWN button.
A typical example for clearing BCM codes would be:

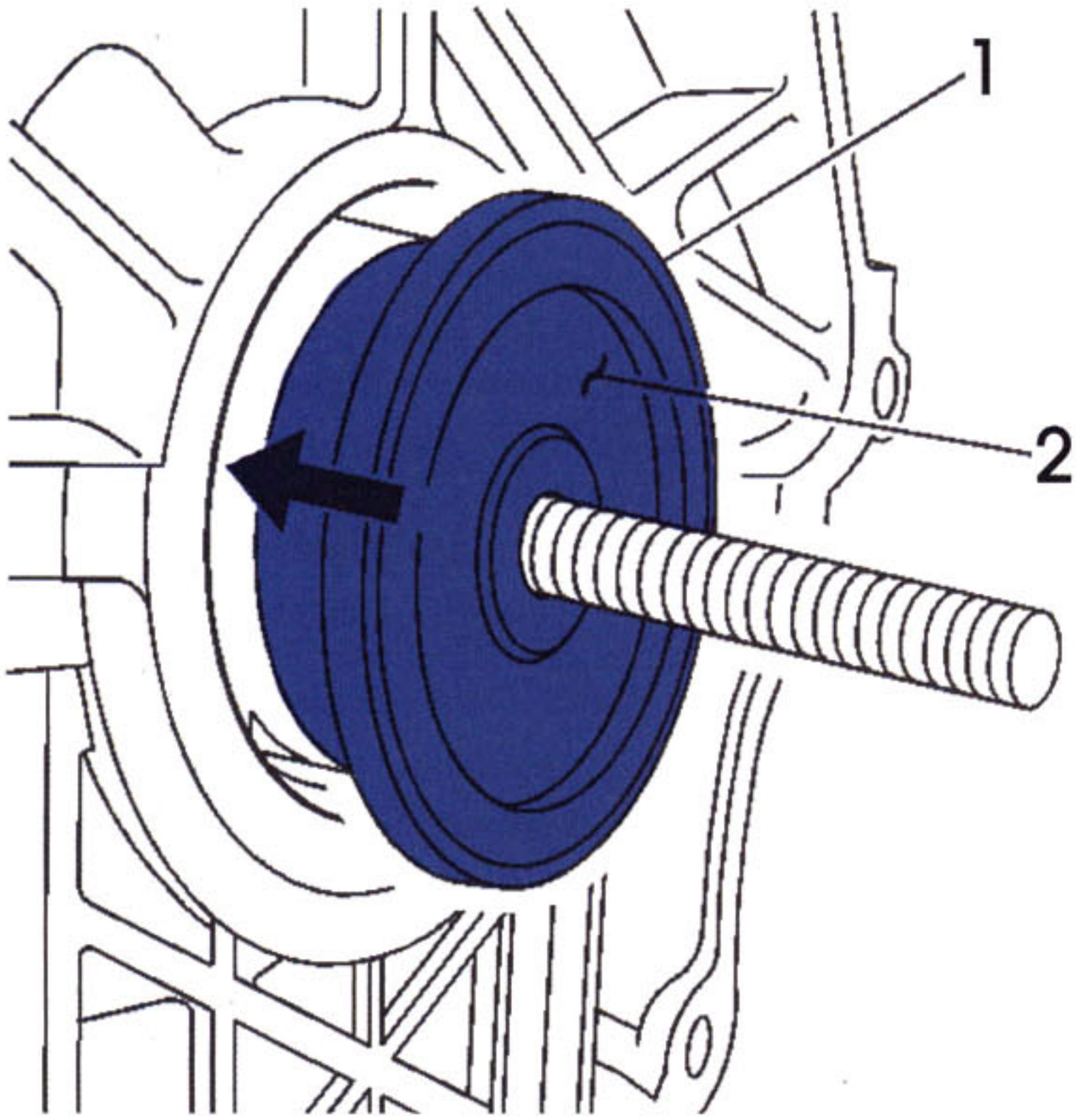
ECM? No
BCM? Yes
BCM DATA? No
BCM INPUTS? No
BCM OUTPUTS? No
BCM OVERRIDES? No
BCM CLEAR CODES? Yes

At this point fault codes stored in memory should be cleared.

For more information about compressor diagnostics and repairs, visit **http://go.delphi.com**.

DELPHI

Circle #62 for Reader Service



drive nut on the mandrel, which will push the seal into the engine block bore. Turn the wrench until the drive drum is snug and flush against the engine block.

6. Loosen and remove the drive nut, washer, bearing and drive drum. Discard the protective nylon sleeve.

7. Verify that the seal has seated properly.

8. Use a flat-bladed screwdriver to remove the two attachment screws from the mandrel and remove the mandrel from the crankshaft hub.

9. Install the engine flywheel.

10. Install the transmission.

11. Inspect for proper fluid levels.

12. Inspect for leaks.

Courtesy of Mitchell 1.

Figure 3

autocarepro:news

Babcox

Brought to you by:
Brake & Front End, ImportCar, Underhood Service and ***TechShop*** Magazines

For the latest automotive
SERVICE TIPS,
NEW PRODUCTS,
PROMOTIONAL OFFERINGS
and **INDUSTRY NEWS**

www.autocarepronews.com

To subscribe to our **FREE email newsletter,**
go to www.autocarepronews.com and click on subscribe.

autocarepro:news
Babcox
September 27, 2007
AFFINIA
Fluke Helps Technicians Find and View Test Tools Online
Fluke Corporation has its 72-page Fluke Tools Catalog available in a digital format, with multiple features for conveniently viewing product information. Users can flip pages with a single click of the mouse; zoom in/zoom out of content; search for specific products or topics by keyword; click on products and topics to link to related or in-depth information. FULL STORY
Work Gloves from Worx Performance Gloves Offer Durability, Dexterity and Resistance to Solvents
Worx Performance Gloves Inc. offers a complete line of H.D. Latex, Nitrile and PVC Vinyl work gloves specifically developed for professionals who demand maximum durability, dexterity and resistance to many hazardous solvents found in today's workplace. FULL STORY
Waekon's Model 77009 Relay Box Test Extension Kit Helps Technicians Pinpoint Test Relay Circuits
The Model 77009 Relay Box Test Extension Kit from Waekon provides a fast, reliable way to pinpoint test relay circuits located in the underhood relay/fuse junction box. Testing is done without wire piercing, removing the junction box for back-probing or trying to find the proper wires in the harness bundle that exits the box. FULL STORY
ARE YOU PERFORMANCE DRIVEN?
Click Here To Find Out.
alwaysachampion.com
CHAMPION

Saturn Cranks But Won't Fire

From the Identifix Hotline Archive:

Vehicle: 2002 Saturn SC Series 1.9L, Vin 8, Mileage: 48,000

Customer Concern: Engine cranks and will not fire at times. Will stall when coming to a stop, and the start right back up. Opens the throttle to help it start.

Tests/Procedures:

1. Test the accuracy of the engine coolant temperature (ECT) sensor by measuring the coolant temperature in the coolant surge tank and comparing it to the temperature on the scan tool. They should be within 8° F of each other.
2. Remove the ECT sensor's electrical connector and inspect for corrosion. Replace the sensor and harness connector if corrosion is found.
3. Test the resistance of the crankshaft position (CKP) sensor when it stalls. The resistance should be close to 900 ohms, depending on temperature.
4. Check for loose terminals at the CKP sensor and at the powertrain control module (PCM) terminal's 08 Yellow wire and 30 Purple wire in the large connector.

Courtesy of Identifix.

Silencing Dodge Ram's Growling Noise

Noises can sometimes be very difficult to diagnose — especially under the hood and only when the vehicle is in motion. In the case of some 2003 Dodge Ram 1500 2WD pickups equipped with 4.7L and 3.7L V8 engines, a growling or moaning sound may only be heard during heavy acceleration when carrying substantial loads or towing.

This condition may be caused by the right motor mount contacting the motor mount frame bracket. The noise can be eliminated by installing a rubber isolator between the motor mount and the motor mount bracket.

Diagnosis

Inspect the right engine mount and bracket. If the motor mount is contacting the bracket, there will be witness marks (shiny metal) present on the frame bracket. Perform the Repair Procedure if the witness marks are present.

THE PROBLEM:

2001 Volkswagen Passat 2.8L: *Warning lights and gauges operate erratically.*

CONFIRMED FIX:

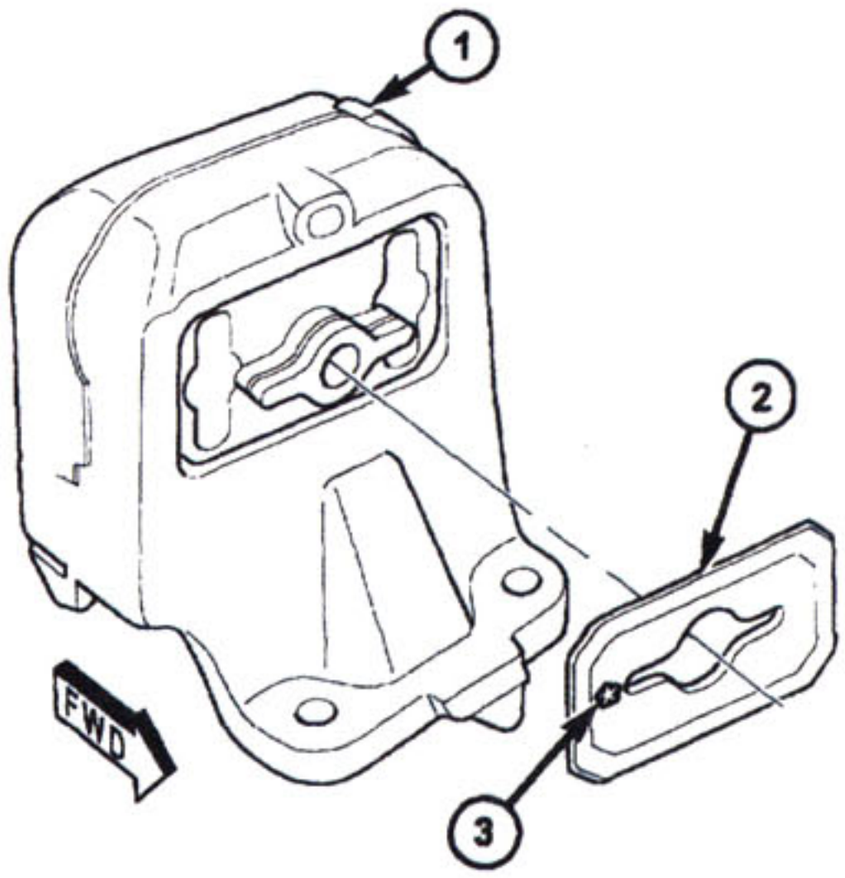
FAULTY ABS CONTROL MODULE, DIAGNOSED USING STEP-BY-STEP PROCEDURE FOUND ON DIRECT HIT.

With many possible causes to the problem, wouldn't it be nice to put your finger on the right fix the first time around?

Introducing Direct-Hit,™ our award winning online diagnostic information service. We're your solution to finding the best and most accurate fix for today's most problematic vehicles. *Give us a call today for more information about how you can take advantage of Direct-Hit,™ 1-800-745-9649 or visit us at www.identifix.com.*

IDENTIFIX DIRECT-HIT

Circle #65 for Reader Service



1 - Right Motor Mount
2 - Isolator
3 - Logo - Facing Front

Figure 4

Repair Procedure

1. Raise the vehicle on a hoist.
2. Place an adjustable jack stand under the engine to support the engine when the motor mount through-bolts are removed.
3. Loosen both motor mount through-bolts. Leave the nut on the left side mount as this bolt will not be removed. Remove the nut on the right side.
4. Raise the engine with the jack stand until the right side through-bolt becomes free. Remove the right side bolt. Raise the engine far enough to clear the frame bracket and allow the isolator pad, (Chrysler P/N 55366020AA) to be inserted.

Insert the isolator on the mount with the Pentastar logo facing the front of the vehicle (see **Figure 4**).

5. Lower the bracket and align the mount with the frame bracket and push the bolt through the isolator and bracket with the threads at the rear.
6. Install the nut and tighten both through-bolts to 115 Nm (85 ft.-lbs.).
7. Remove the jack stand and lower the vehicle.

Courtesy of ALLDATA.

More than 40,000 Members
From Over 120 Countries

Connecting Technicians From Around the World

iATN®
International Automotive Technicians' Network

www.iatn.net

SERVICIO AUTOMOTRIZ
LA REVISTA PARA LOS PROFESIONALES DE LA INDUSTRIA AUTOMOTRIZ

SERVICIO AUTOMOTRIZ IS THE SOURCE FOR TECHNICAL REPAIR INFORMATION FOR THE SPANISH SPEAKING TECHNICIAN

To receive this publication along with your copy of Underhood Service, email us at servicio@babcox.com, fax us at 330.670.0874 or mail us a note at:

Servicio Automotriz
3550 Embassy Parkway
Akron, OH 44333